

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of: Catteau, F. et al.	Group Art Unit: 1742  Examiner: J.A. Morillo
Serial No.: 10/727,051	
Filed: December 4, 2003	
For: EDGE-ON STRESS RELIEF OF THICK ALUMINUM PLATES	

**DECLARATION UNDER 37 CFR 1.132**

Honorable Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

I, François Lemaitre, do hereby declare as follows:

1. I graduated from Ecole Polytechnique (France) in 2000 and from Ecole Nationale Supérieure des Techniques Avancées in 2002. Since then, I have worked in the Alcan's Voreppe Research Center and I am now in charge of a project related to the above-identified patent application ("the present application") for Alcan. I am also familiar with US Patent No 6,406,567 (Haszler) and with European Patent EP 1158068A1 ("EP '068") to Warner.

2. The present application is directed to products having very low stored elastic energy (the stored elastic energy  $WT_{\text{bar}}$  along the T direction is less than  $0.5 \text{ kJ/m}^3$ ). This type of product can be obtained, for example, by using an "edge-on stress-relief" process wherein compression is performed through the width or the length of the product itself. As discussed, for example, in [0049] of the present application, in an "edge-on stress relief" process, compression is performed "along the L or T direction" *i.e.* through width or through length, which significantly reduces the surface area to compress and thus

reduces the number of compression steps and hence the number of overlaps, compared to the prior art process where stress-relieving is carried out in the S direction (that is, in the "through thickness" direction).

3. Haszler describes a process wherein a compression step is performed in the through thickness direction (see column 3 lines 35-38). Drawbacks of the prior art through thickness compression relieving process will inevitably occur on such product produced according to the process described by Haszler. Paragraphs [0030] to [0032] of the present application specifically explain why such processes result in non-uniform and generally high residual (or internal) stress levels. Similarly EP '068 describes a process according to the prior art compression relieving process. As stated in [0027] of EP'068, the plate is "stress relieved by compression in the ST direction with 1.5% deformation". As stated above, the ST direction is the through thickness direction, the compression relieving process of EP'068 is thus according to prior art.

4. Prior art processes such as those conducted by Haszler or EP '068 require that compression be performed through the thickness of the plate (see [0006] to [0008] of the present application). As Haszler indicates (column 3 lines 38 to 43), this requires a multi-step compression procedure, each step stress-relieving only part of volume of material. This intrinsically generates strain heterogeneity during compression and thus internal stress heterogeneities that are avoided by the single or very low number of compression step possible with the procedure of the present application. For example in Paragraph [0056]<sup>1</sup> of the present application, it was not possible to obtain a WTbar lower than 0.5 kJ/m<sup>3</sup> in every region of the product when through thickness compression was utilized. The values for WTbar of 3.5 and 0.37 kJ/m<sup>3</sup> discussed in [0056] are values obtained inside and outside the overlap region which will inevitably occur with a through thickness process such as that taught by Haszler or EP '068.

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<sup>1</sup> It should be noted that there is a typo in paragraph [0056]. Paragraph [0056] reads "WTbar values obtained for the two experimental profiles shown in FIG. 7 were 3.5 and 0.37 kJ/m<sup>3</sup> inside and outside the overlap region respectively" whereas it should read "WTbar values obtained for the two experimental profiles shown in FIG. 4 were 3.5 and 0.37 kJ/m<sup>3</sup> inside and outside the overlap region respectively".

5. On the other hand, products of the present application do, in fact, have WTbar values that are less than  $0.5 \text{ kJ/m}^3$  since it is reported in [0056] that products according to the present application have WTbar values of 0.06 and  $0.14 \text{ kJ/m}^3$ , which are significantly lower than  $0.5 \text{ kJ/m}^3$ . As one of skill in the art, this was surprising and unexpected to me.

6. I further declare that all statements made by me herein are true and all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and may jeopardize the validity of the application or any patent issued thereon.

27/08/07

Date

  
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François Lemaitre